

Course Information Sheet for Physics 570A: Quantum Mechanics

Axiomatic theory of quantum mechanics (state vectors, operators, Hilbert space, measurement theory); Wave mechanics, the uncertainty principle, particle in a classical electromagnetic field; position, momentum, and linear translations; time evolution and quantum dynamics; harmonic oscillators; path-integral formulation of quantum mechanics; theory of rotations and angular momentum; density matrix and quantum ensembles; addition of angular momenta.

Professor: Charles Stafford

Office: PAS 347

Phone: 626-4260

email: staffordphysics92@gmail.com

Web: www.physics.arizona.edu/~stafford/teaching.html
and d2l.arizona.edu

Office hours: W 2-4pm (tentative)

Lectures: TuTh 3:30-4:45pm, PAS 220

Grading:

The course is graded on a curve, based on the cumulative score. The minimum cumulative percentages necessary to obtain the following letter grades will be approximately (but not greater than): $A \geq 85\%$, $B \geq 70\%$, $C \geq 55\%$, $D \geq 40\%$. The cumulative score will be determined as follows:

Homework: 15% (weekly, lowest two scores dropped)

Midterm 1 (October 3): 25%

Midterm 2 (November 7): 25%

Final Exam (3:30-5:30pm, Wednesday, Dec. 18): 35%

All work to be considered for a regrade must be submitted at most one week after it has been returned to the student.

Required Text:

Ramamurti Shankar, "Principles of Quantum Mechanics" (2nd Edition, Springer, 2008).

Additional suggested references:

J. J. Sakurai and J. Napolitano, "Modern Quantum Mechanics" (2nd Edition, Pearson/Addison-Wesley, 2011).

Leslie E. Ballentine, "Quantum Mechanics: A Modern Development" (World Scientific Publishing Company, 2000).

Gordon Baym, "Lectures on Quantum Mechanics" (CRC Press, 2018). Informal but very good.

Claude Cohen-Tannoudji, Bernard Diu, Franck Laloë, “Quantum Mechanics,” Volumes 1–2 (Wiley, 2005). An encyclopedia of QM.

David J. Griffiths, “Introduction to Quantum Mechanics” (2nd Edition, Pearson/Prentice Hall, 2005). Standard undergraduate text, good for a review of the basics.

Accessibility and Accommodations:

At the University of Arizona we strive to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520-621-3268) to explore reasonable accommodation.

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

Academic integrity:

Students are expected to follow the University code of academic integrity and the code of student conduct. These codes can be found at deanofstudents.arizona.edu/policiesandcodes.

Note: The information contained herein is subject to change with reasonable notice from the instructor. Version 8-20-2019.